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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/783,598

02/15/2001

Kiyokazu Moriizumi

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06/29/2005

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EXAMINER

DINH, TUAN T

ART UNIT

PAPER NUMBER

2841

DATE MAILED: 06/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/783,598

Applicant(s)

MORIIZUMI, KIYOKAZU

Examiner

Tuan T. Dinh

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 7-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. The request filed on 04/19/05 for Request for Continued Examination (RCE) under 37 CFR 1.114 based on parent Application No. 09/783,598 is acceptable and a RCE has been established. An action on the RCE follows.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beilin et al. ('685) in the record in view of Albrecht et al. (U.S. Patent 4,968,585).

As to claim 1, Beilin et al. discloses a front-and-back electrically conductive substrate as shown in figures 1-17 comprising:

a plurality of posts (18 or 118) extending through the substrate, said post (18) being anisotropically etched (see column 6, lines 25-67), and each having an electrically conductive portion (14) that has at least first and second surfaces that communicate with each other (figures 7-9 show pads 14 connected on the top and bottom surfaces of the posts 18 for making electrical connection); and an insulative substrate (20) that supports the plurality of posts (18, 118), the insulative substrate (20) being disposed between the first and second surfaces of the substrate.

Beilin et al. does not disclose the post being formed by anisotropically etched silicon.

Albrecht et al. shows micro-miniature tips formed using semiconductor IC technique as shown in figures 1-5 comprising a post (18) being formed by anisotropically etched silicon, see abstract, lines 4-6, column 2, lines 30-37, column 3, lines 9-11, and column 4, lines 16-47).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the post being formed by anisotropically etched silicon as taught by Albrecht et al. employ in the substrate of Beilin et al. in order to achieve a fine pitch interconnection applied in a high density wiring board or substrate.

As to claim 2, Beilin discloses the electrically conductive portion (pad 14) comprises an electrically conductive film (see figures 6-9) covering a peripheral surface of the posts (18).

As to claim 3, Beilin discloses the insulative substrate (1) is composed of an organic resin (column 4, lines 27-35); and the electrically conductive portion (14) is a metal having a melting temperature higher than a melting temperature of an insulation used in the insulative substrate (20), (Note: the melting temperature of metal is higher than the melting temperature of the resin material of the insulative substrate, for example, copper (Cu) having the melting temperature higher than the melting temperature of resin (plastic or silicon et.)).

As to claim 5, Beilin as shown in figure 9 discloses a wiring pattern layer (the wiring is near the pad 14 formed on the top surface) and an insulation layer (another

insulative layer 20 on top of the layer 20, see figure 9) is formed on at least the first surface (top surface) of the substrate.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beilin et al. ('685) in view of Albrecht et al. (585), and further in view of Onishi et al. (U.S. Patent 5,459,368).

As to claim 4, Beilin and Albrecht et al. teach the substrate further comprising a pad (14). However, they do not specific disclose pad (14) for mounting a semiconductor component is formed on at least the first surface of the substrate.

Onishi et al. teaches an electronic device (1) as shown in figure 1 mounted on a pad of a substrate.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a pad for mounting a device, as taught by Onishi et al. employ in the substrate of Beilin and Albrecht et al. for the purpose of providing an excellent electrical connective bonding.

As to claim 6, Beilin and Albrecht et al. do not teach the insulation material of the insulative substrate having compensation of CTE different from the CTE of a mounted semiconductor component. However, Onishi et al. show a surface acoustic wave

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device mounted module in figure 1 comprising a surface acoustic wave element (1) made of at least one material selected from a group consisting of lithium niobate, lithium tannalate, lithium borate, and quartz, and an insulating resin multiplayer substrate (8), see column 4, lines 36-47. There is a compensation of different material between the multiplayer substrate and the element that would have different CTE therebetween.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the compensation of a different material having different CTE in the substrate of Beilin and Albrecht et al., as taught by Onishi et al., for the purpose of providing the sufficient melting temperature that applied on a component when mounted on a substrate.

Response to Arguments

6. Applicant's arguments with respect to claims 1-6 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Capps et al. and Motomura et al. disclose related art.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan T. Dinh whose telephone number is 571-272-1929. The examiner can normally be reached on M-F.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kammie Cuneo can be reached on 571-272-1957. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tuan Dinh
June 22, 2005.


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